MI FluFocus

Influenza Surveillance and Avian Influenza Update

Bureau of Epidemiology
Bureau of Laboratories

Michigan Department of Community Health
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New updates in this issue:

- **Michigan Surveillance:** Statewide activity is upgraded to Regional as multiple indicators increase.
- **National Surveillance:** CDC issues advisory about pediatric influenza and *S. aureus* co-infections.
- **Avian Influenza:** Indonesia reports new human cases; multiple countries have poultry outbreaks.

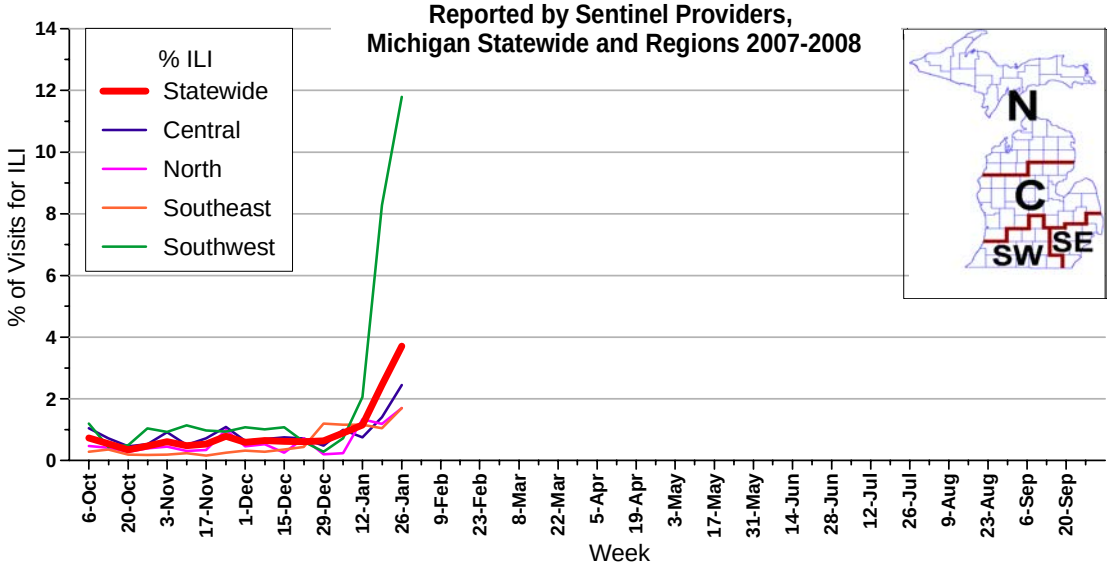
Michigan Disease Surveillance System: The week ending January 26 saw aggregate flu-like illness remain near last week's levels, while individual flu reports saw a second week of noticeable increases. Aggregate flu-like illness reports are comparable with numbers seen this time last year while individual influenza reports are considerably higher.

Emergency Department Surveillance: Emergency department visits due to both constitutional and respiratory complaints increased this past week. Both respiratory and constitutional complaints, however, are not inconsistent with numbers that were seen this time last year. Fourteen constitutional alerts in the C(3), N(6), SE(3) and SW(1) Influenza Surveillance Regions including 1 Statewide alert and eighteen respiratory alerts in the C(6), N(4), SE(2) and SW(6) Influenza Surveillance Region were generated last week.

Over-the-Counter Product Surveillance: Overall, OTC product sales activity saw a slight increase this week. Unpromoted thermometer sales, however, remained steady while thermometer sales in general saw a slight increase. The indicators levels are comparable to those seen at this time last year.

Sentinel Surveillance (as of January 31): The proportion of visits due to influenza-like illness (ILI) in Michigan increased markedly over the last three weeks, and is at 3.7% for the week ending Jan. 24. This represents 356 cases of ILI out of 9601 total patient visits; 37 sentinels provided data for this report. The increase was principally due to one practice in Kalamazoo which reported 30% ILI (129/436) last week; this was 36% (144/276) of the ILI cases reported statewide. The proportion of visits due to ILI increased in the other 3 regions last week as well, with the Central region rising the most, to 2.4%. The North and Southeast regions both increased to 1.7%. Note that these rates may change as additional reports are received.

Percentage of Visits for Influenza-like Illness (ILI) Reported by Sentinel Providers, Michigan Statewide and Regions 2007-2008



As part of pandemic influenza preparedness, CDC and MDCH highly encourage year-round participation from all sentinel providers. New practices are encouraged to join the sentinel surveillance program today! Contact Rachel Potter at 517-335-9710 or potterr1@michigan.gov for more information.

Laboratory Surveillance (as of January 31): For the 2007-2008 influenza season, the MDCH Bureau of Laboratories has identified 91 influenza isolates:

- 36 A/H3N2: Southeast (16); Central (10); Southwest (8); North (2)
- 2 A/H1N1: Southeast (1); North (1)
- 45 A subtype pending: Southeast (16); Central (14); Southwest (8); North (7)
- 8 B: Southeast (5); North (2); Central (1). All have been typed as B/Shanghai/361/2002-like

Sentinel laboratories are reporting increasing positive influenza A tests and some influenza B positives, with individual labs in the Southwest region seeing a noticeable increase in influenza A positives over the past three weeks. The number of RSV positive tests continues to increase statewide; sporadic adenoviruses have also been reported.

***As a reminder, the positive predictive value of influenza rapid tests decreases during times of low influenza prevalence. MDCH suggests that during periods of low influenza activity in your community, all positive rapid tests results be confirmed by sending in a specimen for viral culture; this can be arranged through your local health department.

Influenza-Associated Pediatric Mortality (as of January 31): For the 2007-2008 season, there are no confirmed reports of influenza-related pediatric mortality in Michigan.

***The CDC has asked all states to collect information on any pediatric death associated with influenza infection. This includes not only any death in a child (<18 years) resulting from a compatible illness confirmed to be influenza by an appropriate diagnostic test, but also any unexplained death with evidence of an infectious process in a child. See www.michigan.gov/documents/fluletter_107562_7.pdf for the complete protocol. Please immediately call MDCH to ensure that proper clinical specimens are obtained.

Congregate Settings Outbreaks (as of January 31): One confirmed influenza outbreak and four additional respiratory outbreaks have been reported to MDCH for the 2007-2008 influenza season. An outbreak in a long-term care facility in the Southeast region was confirmed by MDCH BOL testing to be due to influenza A (subtype pending). In the Central region, a K-12 school was closed due to high numbers of students and staff with high fevers and respiratory symptoms; respiratory viral cultures are underway at the MDCH BOL. A nursing home, an assisted living facility and a teenage school co-op program from the Central region and a small college from the Southwest region have all reported outbreaks due to influenza-like illness; investigations are underway.

National (CDC Health Advisory [edited], January 30): From October 1, 2006 through September 30, 2007, 73 deaths from influenza in children were reported to CDC from 39 state health departments and two city health departments. Data on the presence (or absence) of bacterial co-infections were recorded for 69 of these cases; 30 (44%) had a bacterial co-infection, and 22 (73%) of these 30 were infected with *Staphylococcus aureus*.

The number of pediatric influenza-associated deaths reported during 2006-07 was moderately higher than the number reported during the two previous surveillance years; the number of these deaths in which pneumonia or bacteremia due to *S. aureus* was noted represents a five-fold increase. Only one *S. aureus* co-infection among 47influenza deaths was identified in 2004-2005, and 3 co-infections among 46 deaths were identified in 2005-2006. Of the 22 influenza deaths reported with *S. aureus* in 2006-2007, 15 children had infections with methicillin-resistant *S. aureus* (MRSA).

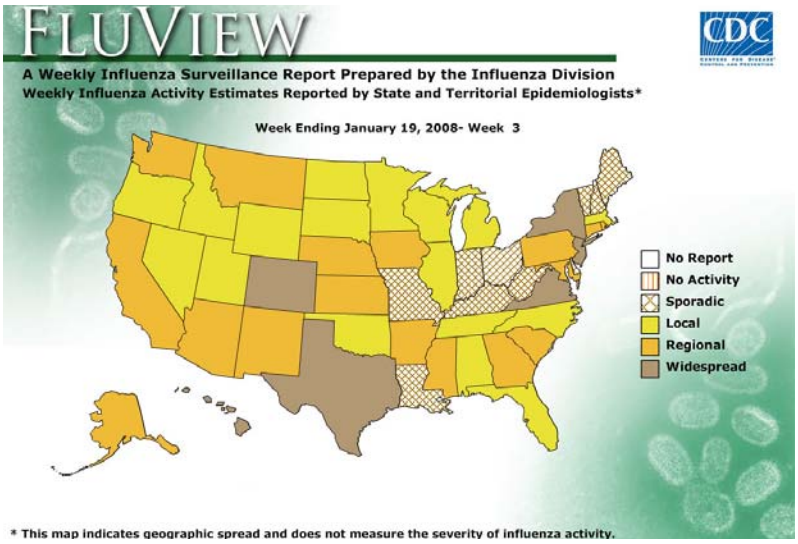
Health care providers should test persons hospitalized with respiratory illness for influenza, including those with suspected community-acquired pneumonia. Health care providers should be alerted to the possibility of bacterial co-infection among children with influenza, and request bacterial cultures if children are severely ill or when community-acquired pneumonia is suspected. Health care providers should be aware of the prevalence of methicillin-resistant *S. aureas* strains in their communities when choosing empiric therapy for patients with suspected influenza-related pneumonia. Clinicians, health care providers, and medical examiners are asked to contact their local or state health department as

soon as possible when deaths among children associated with laboratory-confirmed influenza are identified.

The entire advisory is online: http://www2a.cdc.gov/HAN/ArchiveSys/ViewMsgV.asp?AlertNum=00268

National (CDC, January 25): During week 3 (January 13 - 19, 2008), influenza activity continued to increase in the United States. Three hundred twenty-nine (11.1%) specimens tested by U.S. World Health Organization (WHO) and National Respiratory and Enteric Virus Surveillance System (NREVSS) collaborating laboratories were positive for influenza. The proportion of deaths attributed to pneumonia and influenza was slightly above the epidemic threshold. The proportion of outpatient visits for influenza-like illness (ILI) was above national baseline levels, and the proportion of outpatient visits for acute respiratory illness (ARI) was below national baseline levels. The East North Central, East South Central, Mountain, New England, Pacific, West North Central, and West South Central regions reported ILI at or above their region-specific baselines. Six states reported widespread influenza activity; 17 states reported regional influenza activity; 17 states and the District of Columbia reported local influenza activity; 10 states and Puerto Rico reported sporadic influenza activity.

To access the entire CDC weekly surveillance report throughout the influenza season, visit http://www.cdc.gov/flu/weekly/fluactivity.htm
CDC has also posted an updated Q&A document regarding antiviral resistance [see articles below], which is available at http://www.cdc.gov/flu/about/qa/antiviralresistance.htm



International (European Centre for Disease Prevention and Control, January 28): Preliminary results from a survey of antiviral drug susceptibility among seasonal influenza viruses circulating in Europe has revealed that some of the A (H1N1) viruses in circulation this winter are resistant to the antiviral drug, oseltamivir (also know by the brand name Tamiflu). So far, 148 samples of influenza A(H1N1) viruses isolated during November and December from ten European countries have been tested by the EU funded VIRGIL network. Of the 148 samples, 19 showed evidence of resistance to oseltamivir.

12 of the samples that tested positive for resistance to oseltamivir came from Norway. This was from a total of 16 virus samples sent for testing. Given the initial indication of a high level of resistance to oseltamivir in the A H1N1 viruses circulating in Norway, late last week once the information came to their attention, the Norwegian authorities notified their EU partners and the World Health Organization (WHO) of this situation. The Norwegian Public Health Institute also published an advisory to doctors and the public on its website that evening.

Experts from the European Centre for Disease Prevention and Control (ECDC), the European Commission, and WHO are currently assessing the significance of the data from the VIRGIL network. An interim joint assessment will be published in the coming days, based on the limited data currently available.

At this stage it is impossible to say what the level of resistance is in influenza across Europe. However from the limited data, the proportion of influenza viruses exhibiting resistance to oseltamivir must be significant, but not as high as in Norway. People who become ill with the oseltamivir resistant strain of

A(H1N1) do not appear to become any more sick than people infected with “normal” seasonal influenza. That said, it should be remembered that any influenza A can cause severe disease or death in vulnerable people (older people, those with debilitating illnesses and the very young).

International (The Associated Press [edited], January 29): Canada's National Microbiology Laboratory is reporting a high level of Tamiflu resistance among H1N1 viruses circulating so far this flu season in this country, one of a number of labs to see a phenomenon that is unsettling influenza experts.

Nearly 10 per cent of H1N1 viruses tested so far this year by the Winnipeg lab are resistant to the drug, a cornerstone of pandemic planning for many countries around the globe. In the past, fewer than one per cent of circulating human flu viruses were thought to be resistant to Tamiflu.

“That's quite a surprise,'' the lab's scientific director, Dr. Frank Plummer, said, noting the resistance mutation spotted in the Winnipeg testing is the same one that has been reported over the past few days from Norway, several other European countries and the United States.

Eight of 81 H1N1 viruses tested carry the H274Y mutation _ one each from British Columbia and Newfoundland and Labrador, and six from Ontario. Plummer said that total includes one virus (from British Columbia) recovered from a child who is believed to have been infected in Sudan.

His surprise is shared by experts with the World Health Organization's Global Influenza Program, which convened a teleconference of about 50 scientists from leading influenza laboratories around the world Tuesday to try to get a handle on how far this virus has spread, how common it is in places where it is being found and what is driving the spread.

Dr. Frederick Hayden, a leading antiviral expert working at the WHO, said the resistance virus has been reported over a broad geographic range, both in terms of countries and within countries themselves. “We do know that again within the countries that have the information, it's not just focal pockets. There are multiple sites, for example, within France or within Norway where this has been detected,'' he said from Geneva.

The United States has reported that 5.5 per cent of tested H1N1 viruses there are resistant to the drug. European countries known to have found resistant viruses include Norway, Denmark, France and the United Kingdom. Hayden suggested more countries have found these viruses, but said he wasn't at liberty to name names.

Perplexingly, Japan _ the country that uses more Tamiflu by far than any other in the world _ has not found any of these resistant viruses this flu season, Hayden said.

But it had been thought that viruses that acquired this H274Y resistance mutation would pay for that gain with a corresponding loss in their ability to transmit. The belief was that if they developed in someone using Tamiflu, they would be unlikely to infect contacts of that person and start to circulate more widely _ in essence, that they would be too weak to compete with regular flu viruses in the race to infect human respiratory tracts.

These recent findings suggest the drug is more vulnerable to the development of drug resistance than had been previously thought, experts fear.

“This mutation is not going to affect the fitness of the viruses as much as we thought,'' said Jennifer McKimm-Breschkin, a virologist with Australia's Commonwealth Science and Industrial Research Organization in Melbourne.

“We're now seeing the ability of this virus that we thought would not have the ability to compete (with unmutated viruses) spreading globally,'' she said, suggesting that doesn't bode well if H5N1 avian flu starts a pandemic. The same mutation creates Tamiflu resistance in H5N1 viruses.

Dr. Joe Bresee, chief of flu epidemiology and prevention at the U.S. Centers for Disease Control, questioned Monday whether there was a true rise in the number of resistant viruses.

Bresee cautioned that increased influenza surveillance prompted by concerns over the H5N1 virus may be turning a spotlight on something that always existed but went unnoticed in the past.

Hayden disagreed, saying an international network of antiviral experts has been watching for this resistance pattern but it has only been found rarely.

``Basically it was present at very low frequencies, less than a half per cent. In most studies, (it was) not even detected. So I think this is a new phenomenon and one that we need to understand better."

He said work is already underway to try to catalogue cases and to sequence resistant viruses to see if their genomes hold clues to how the resistance arose.

International (WHO, January 28): During weeks 2–3, the level of overall influenza activity in the world increased slightly. An increase in both influenza activity and the number of influenza viruses detected was observed in most countries of northern European and North America, where mostly influenza A (H1N1) virus circulated.

The entire report can be found online at http://www.who.int/csr/disease/influenza/update/en/

MDCH reported **REGIONAL ACTIVITY** to the CDC for the week ending January 26, 2008.

For stakeholders interested in additional information regarding influenza vaccination and education, the MDCH publication *Michigan FluBytes* is available online at http://www.michigan.gov/mdch/0,1607,7-132-2940_2955_22779_40563-125027--,00.html. *FluBytes* is published weekly during the influenza season.

End of Seasonal Report

Avian Influenza Activity

WHO Pandemic Phase: Phase 3 - Human infection(s) with a new subtype, but no human-to-human spread or rare instances of spread to a close contact.

International, Human (WHO, January 29): The Ministry of Health in Indonesia has confirmed an additional four cases of human infection with the H5N1 avian influenza virus. Two of these cases were fatal. There is no evidence of an epidemiological link between the cases.

The first case, a 31-year-old female from East Jakarta, Jakarta Province, developed symptoms on 18 January, was hospitalized on 22 January and is currently in hospital. The investigation indicated that she visited a wet market where live poultry are sold three days prior to symptom onset.

The second case, a 9-year-old male from Depok Municipality, West Java, developed symptoms on 16 January, was hospitalized on 23 January and died on 27 January. Investigations into the source of his infection indicate that the case lived next door to a wet market where live poultry are sold.

The third case, a 32-year-old male from Tangerang Municipality, Banten Province, developed symptoms on 17 January, was hospitalized on 24 January and is currently in hospital. Investigations into the source of his infection are ongoing.

The fourth case, a 23-year-old female from East Jakarta, Jakarta Province, developed symptoms on 19 January, was hospitalized on 24 January and died on 27 January. Investigations into the source of her infection are ongoing.

Of the 124 cases confirmed to date in Indonesia, 100 have been fatal.

International, Human (WHO, January 30): The Ministry of Health of Indonesia has announced the death of a previously confirmed case of H5N1 infection. The 32-year-old male from Tangerang Municipality, Banten Province died on 29 January. Of the 124 cases confirmed to date in Indonesia, 101 have been fatal.

International, Human (The Associated Press [edited], January 25): China has confirmed that a father and son who were sickened with bird flu are the country's first infections within the same family, but said

their cases showed no evidence that the virus has changed into a form that can easily be passed between humans, according to the World Health Organization.

The 24-year-old son from the eastern city of Nanjing died Dec. 2, becoming China's 17th fatality from the H5N1 bird flu virus. His 52-year-old father began showing symptoms a day later and was confirmed to have the disease.

State media said the man, identified only by his surname Lu, was released Dec. 26 after 20 days in a hospital.

``The outbreak was a confirmed family cluster of human infection with H5N1 avian influenza between blood relatives for the first time in mainland China,'' Hans Troedsson, WHO's representative in China, said Friday.

More than 80 people who had come in contact with the two men were monitored, but so far there have been no other reported infections.

While the Ministry of Health ``has not ruled out the possibility that the second case might have acquired infection from the first case, there was no evidence ... that there were any changes in the genetic sequences that make the virus more efficient in human-to-human transmission,'' Troedsson said.

Six days before the onset of his illness, the son visited a market where live poultry were slaughtered and sold, possibly exposing him to the virus, Troedsson said. While the father had direct contact with his son's respiratory secretions and waste, ``the Ministry of Health could not completely rule out the possibility of his separate exposure'' to the market, he said.

International, Human (The Liverpool Daily Post [edited], January 25): Special blood tests on rare cases of avian flu in North Wales prove there was no person-to-person spread of the disease. Two people in North Wales were among four cases confirmed in the UK of bird flu H7N2.

H7 virus is a low pathogenic virus, unlike the highly deadly H5 strain which caused more than 200 deaths in Asia and Eastern Europe. The outbreak of H7 came to light last May when cases were found in poultry on a smallholding in the village of Llanfihangel GM near Corwen. There were then two further cases in the North West in the St Helens area among people who had purchased poultry from the same source.

Wales had 218 human contacts with symptoms. Yesterday the National Public Health Service for Wales (NPHS) revealed the results of second human blood tests have proved negative.

Dr Chris Whiteside, Consultant in Communicable Disease Control for the NPHS in North Wales, said: "Our experience in Wales and the North Westwould tend to confirm the perceived wisdom about H7N2 infection. This is a viral infection that does not spread easily from birds to humans. There is still no evidence that it can spread easily from person to person."

International, Poultry (RIA Novosti [edited], January 24): A new outbreak of the deadly H5N1 strain of bird flu has been detected in northern Thailand, the Xinhua news agency said on Thursday, citing local livestock officials.

The source of the deadly virus, which has so far killed 219 people worldwide, was detected at a poultry farm near the city of Nakhon Sawan, about 240 km (150 miles) north of the capital, Bangkok. Over 4,000 chickens have died and over 10,000 have been culled so far at the farm since the start of the year.

International, Poultry (Agence France-Presse, January 24): Bangladesh needs house-to-house surveillance to fight bird flu because the situation has worsened, the United Nation's Food and Agriculture Organisation (FAO) said on Thursday. The UN FAO statement came as neighbouring India battled its worst-ever outbreak of bird flu -- believed to have spread from Bangladesh, which has been reporting sporadic outbreaks of the deadly H5N1 strain since early 2007.

"The situation has worsened in the past week compared to the first few months of the outbreak. The international community is very concerned," FAO's Bangladesh chief Ad Spijkers told AFP here in Dhaka. "We took the concern to the minister Wednesday and donors are going to meet with the government very soon to discuss comprehensive measures to fight the disease. It's posing a danger to public health," he said.

Spijkers' statement came amid a rise in outbreaks in the country's southern, central and northern districts. The government said more than 20,000 birds were slaughtered in the past week.

On Thursday, Bangladesh border security forces were put on high alert to stop transport of poultry from India's West Bengal state, where authorities are struggling to control a massive outbreak of deadly bird flu.

Officials admit the situation has worsened in the past week but insist the disease remains contained in the impoverished country of 144 million people. "We don't think the situation is as bad as in West Bengal," a director of livestock department Salahuddin Khan said on Wednesday. Experts differed, saying the situation is far worse than the government claims while farmers were also holding back from reporting many cases.

International, Poultry (Associated Press [edited], January 24): Indian authorities inspected poultry markets Thursday in an attempt to prevent the country's worst outbreak of bird flu from spreading to crowded Calcutta, as Thailand announced a new outbreak, prompting the United Nations to warn of the global threat posed by the virus.

Calcutta health officials searched poultry markets Thursday, looking for signs of infected birds after the virus was discovered just 30 kilometers (18 miles) from the city of 14 million people.

``We are keeping a strict vigil,'' said D.D. Chattopadhyay, the city's chief medical officer. No human cases have been reported in India so far.

About 700,000 birds have been slaughtered since the disease was discovered last week in eastern India's West Bengal state and health workers plan to kill another 1.4 million, said state Animal Husbandry Minister Anisur Rahman.

``We are doing our best to stop the virus from spreading to Calcutta and other districts, `` Rahman said, adding that some 750 teams were involved in the slaughter. But concerns have been heightened by Indian authorities' failure so far to halt the spread of the disease, amid accusations of bureaucratic bungling and problems securing cooperation from villagers, who have hidden chickens or smuggled them to other areas, fearing financial loss.

“Culling is slow and ham-handed,'' said West Bengal Poultry Welfare Association President Sheikh Nazrul Islam, who said losses to the poultry industry totaled 1 billion rupees (US$25 million; euro17 million) in the last week. While India has successfully contained two previous outbreaks, they were both in large poultry farms. This outbreak has largely struck chickens kept by peasants in their small yards, and many villagers were unaware of the danger.

International, Poultry (The Associated Press, January 25): A new bird flu outbreak has killed 30 chickens in northern Thailand, the second reported in two days, a livestock official said Friday.

The outbreak was confirmed by laboratory tests after the poultry deaths were reported a week ago in Saklek district of Phichit province, about 290 kilometers (180 miles) north of the capital, Bangkok, said Pisanu Tulyawanich, head of the province's livestock department. The birds were infected with the H5 strain of bird flu and tests were under way to determine whether it was the virulent H5N1 subtype, he said. About 100 free-range chickens being raised in the area have already been killed, Pisanu said.

On Thursday, lab tests confirmed the H5N1 virus killed 400 chickens in central Thailand, the first such outbreak since March 18, 2007, when about 50 ducks and chickens were found dead in northeastern Thailand.

International, Poultry (Asia Pulse Limited [edited], January 25): The dreaded bird flu today gripped more than half of West Bengal with the disease spreading to two more districts of West Bengal--Purulia and Howrah adjacent to Kolkata. The High Security Animal Disease Laboratory in Bhopal has confirmed avian influenza (H5) in samples from Sankrail Block of Howrah district and Santuri block of Purulia district, an official statement in Delhi said.

With the spread of the virus in these two districts, the total number of districts affected by bird flu have reached 11. The state has a total of 19 districts. The nine districts already affected by bird flu are

Birbhum, South Dinajpur, Murshidabad, Nadia, Burdwan, Bankura, Malda, Cooch Behar and Hooghly.

The samples from Mayureswar-II and Khoyrasole blocks of Birbhum district and Kandi block of Murshidabad district have also tested positive for avian influenza, it said.

Official sources in Kolkata said 10.11 chicken have been culled in the nine affected districts while 1.46 lakh eggs were destroyed till January 24. Around 1.14 lakh chicken seed were also culled till yesterday.

At least 901 rapid Response Teams were deployed today in the state for carrying out culling and surveillance operations.

International, Poultry (Reuters [edited], January 29): China has detected an outbreak of the highly pathogenic H5N1 strain of bird flu in poultry in Tibet, a government Web site said on Tuesday. A total of 1,000 poultry have died of the disease in Gonggan county since January 25, while another 13,080 have been culled, the Ministry of Agriculture said on its Web site (www.agri.gov.cn). "The National Avian Influenza Reference Laboratory confirmed the virus as a subtype of the H5N1 strain," it said.

International, Poultry (Reuters [edited], January 29): Saudi authorities have culled nearly 160,000 birds after a new case of the deadly strain of bird flu was found on a farm outside Riyadh, state media said on Tuesday.

The Saudi Press Agency said 158,000 birds were exterminated at al-Kharj, 150 km (94 miles) south of the capital, after the H5N1 strain of bird flu was found there.

Authorities killed thousands of birds in al-Kharj and other sites near Riyadh in November, as inspection teams combed farms and markets around the city of about 4 million people. In March, Saudi Arabia said the deadly H5N1 strain of bird flu had been discovered in peacocks, turkeys, ostriches and parrots at a house in the east of the kingdom and that an unspecified number of birds in the area had been culled.

International, Wild Birds (Birmingham Post and Mail Ltd., January 27): A sixth swan from an infected sanctuary has tested positive for avian flu, the Department for Environment, Food and Rural Affairs (Defra) said. Restrictions on the movement of poultry or other captive birds in the Wild Bird Monitoring Area around Abbotsbury Swannery in Dorset were lifted at 3pm on Friday. But other restrictions remain in place. The swannery is part of an area of wetland recognised to be of international importance. The Health Protection Agency has monitored about 12 staff for signs of the disease, although the risk of infection is said to be low.

International, Wild Birds (Dow Jones, January 30): A seventh swan has tested positive to H5N1 bird flu, said the U.K.'s Department for Environment Food and Rural Affairs Wednesday. The swan was collected on Jan. 24 in the southwest English county of Dorset as part of a surveillance program in the area. The department said it was most likely the swan was infected by a migratory wild bird.

Michigan Wild Bird Surveillance (USDA, as of January 31): For the 2007 testing season, 1931 Michigan samples have been taken so far, comprised of 100 live bird samples, 1384 hunter-killed birds, 172 morbidity/mortality samples, and 275 environmental samples.

HPAI subtype H5N1 has not been recovered from any Michigan samples tested to date, or from the 81,993 birds or environmental samples tested nationwide. The 2007 testing season will run from April 1, 2007-March 31, 2008. For more information, visit the National HPAI Early Detection Data System website at http://wildlifedisease.nbii.gov/ai/.

To learn about avian influenza surveillance in Michigan wild birds or to report dead waterfowl, go to Michigan's Emerging Disease website at http://www.michigan.gov/emergingdiseases.

Please contact Susan Vagasky at VagaskyS@Michigan.gov with any questions regarding this newsletter or to be added to the weekly electronic mailing list.

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(Source: http://www.oie.int/downld/AVIAN%20INFLUENZA/A_AIAsia.htm Downloaded 1/29/2008)

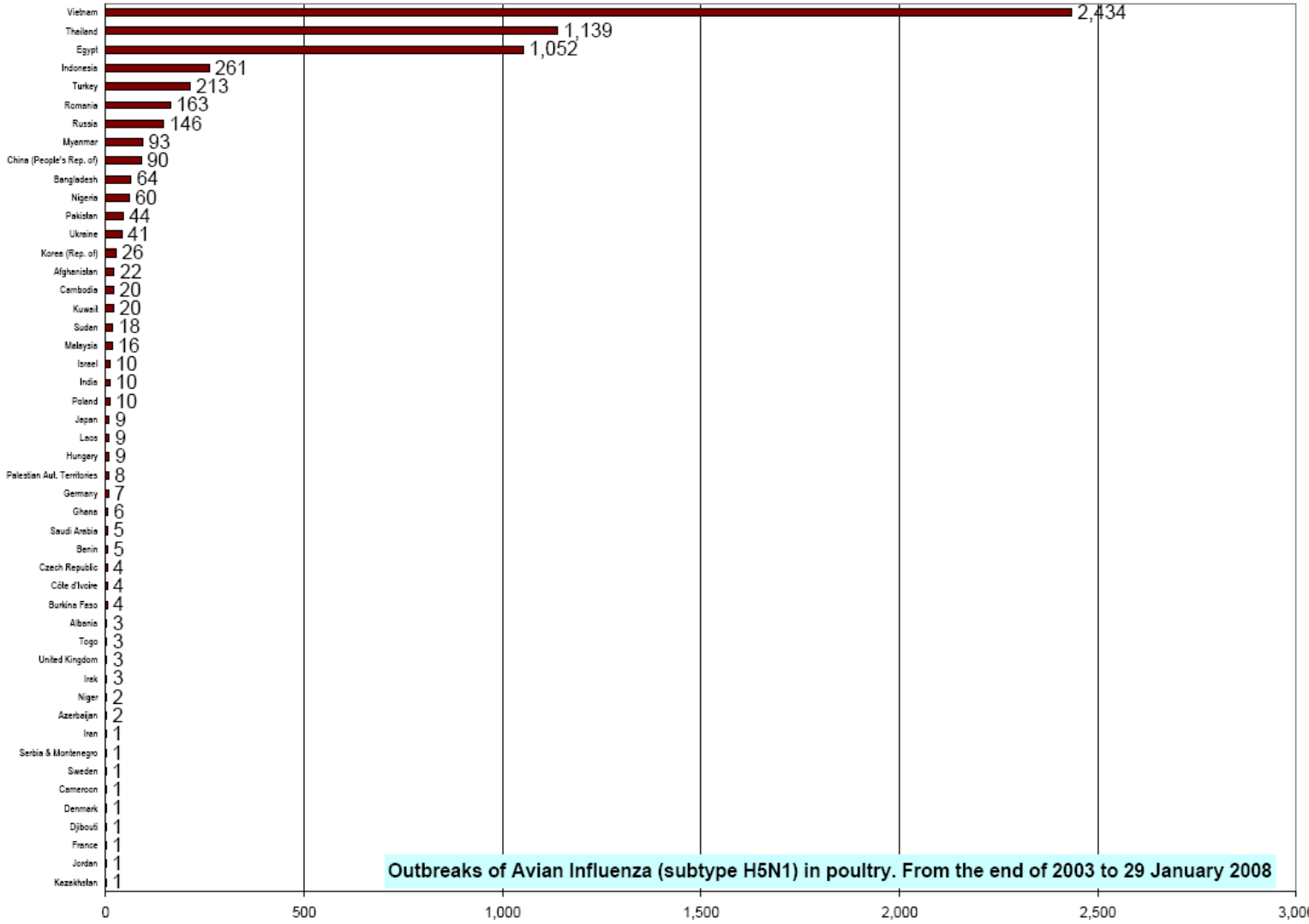

Table 2. H5N1 Influenza in Humans (Cases up to January 30, 2008)

(http://www.who.int/entity/csr/disease/avian_influenza/country/cases_table_2008_01_30/en/index.html Downloaded 1/30/2008)

Cumulative number of lab-confirmed human cases reported to WHO. Total number of cases includes deaths.

Country	2003		2004		2005		2006		2007		2008		Total	
	cases	deaths	cases	deaths	cases	deaths	cases	deaths	cases	deaths	cases	deaths	cases	deaths
Azerbaijan	0	0	0	0	0	0	8	5	0	0	0	0	8	5
Cambodia	0	0	0	0	4	4	2	2	1	1	0	0	7	7
China	1	1	0	0	8	5	13	8	5	3	0	0	27	17
Djibouti	0	0	0	0	0	0	1	0	0	0	0	0	1	0
Egypt	0	0	0	0	0	0	18	10	25	9	0	0	43	19
Indonesia	0	0	0	0	20	13	55	45	42	37	7	6	124	101
Iraq	0	0	0	0	0	0	3	2	0	0	0	0	3	2
Lao People's Dem. Rep.	0	0	0	0	0	0	0	0	2	2	0	0	2	2
Myanmar	0	0	0	0	0	0	0	0	1	0	0	0	1	0
Nigeria	0	0	0	0	0	0	0	0	1	1	0	0	1	1
Pakistan	0	0	0	0	0	0	0	0	1	1	0	0	1	1
Thailand	0	0	17	12	5	2	3	3	0	0	0	0	25	17
Turkey	0	0	0	0	0	0	12	4	0	0	0	0	12	4
Viet Nam	3	3	29	20	61	19	0	0	8	5	1	1	102	48
Total	4	4	46	32	98	43	115	79	86	59	8	7	357	224